

SEQUENCE LISTING

<110> USUDA, YOSHIHIRO

KURAHASHI, OSAMU

<120> METHOD FOR PRODUCING L-METHIONINE BY FERMENTATION

<130> 0010-1057-0

<140> 09/441,055

<141> 1999-11-16

<150> JP 10-326717

<151> 1998-11-17

<160> 29

<170> PatentIn version 3.1

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gac aaa att gct gac caa att tct gat gcc gtt tta gac gcg atc ctc	96
Asp Lys Ile Ala Asp Gln Ile Ser Asp Ala Val Leu Asp Ala Ile Leu	
20 25 30	

gaa cag gat ccg aaa gca cgc gtt gct tgc gaa acc tac gta aaa acc	144
Glu Gln Asp Pro Lys Ala Arg Val Ala Cys Glu Thr Tyr Val Lys Thr	
35 40 45	

ggc atg gtt tta gtt ggc ggc gaa atc acc acc agc gcc tgg gta gac	192
Gly Met Val Leu Val Gly Gly Glu Ile Thr Thr Ser Ala Trp Val Asp	
50 55 60	

atc gaa gag atc acc cgt aac acc gtt cgc gaa att ggc tat gtg cat	240
Ile Glu Glu Ile Thr Arg Asn Thr Val Arg Glu Ile Gly Tyr Val His	
65 70 75 80	



tcc gac atg ggc ttt gac gct aac tcc tgt gcg gtt ctg agc gct atc Ser Asp Met Gly Phe Asp Ala Asn Ser Cys Ala Val Leu Ser Ala Ile 85 90 95	288
ggc aaa cag tct cct gac atc aac cag ggc gtt gac cgt gcc gat ccg Gly Lys Gln Ser Pro Asp Ile Asn Gln Gly Val Asp Arg Ala Asp Pro 100 105 110	336
ctg gaa cag ggc gcg ggt gac cag ggt ctg atg ttt ggc tac gca act Leu Glu Gln Gly Ala Gly Asp Gln Gly Leu Met Phe Gly Tyr Ala Thr 115 120 125	384
aat gaa acc gac gtg ctg atg cca gca oct atc acc tat gca cac cgt Asn Glu Thr Asp Val Leu Met Pro Ala Pro Ile Thr Tyr Ala His Arg 130 135 140	432
ctg gta cag cgt cag gct gaa gtg cgt aaa aac ggc act ctg ccg tgg Leu Val Gln Arg Gln Ala Glu Val Arg Lys Asn Gly Thr Leu Pro Trp 145 150 155 160	480
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aaa atc gtt ggt atc gat gct gtc gtg ctt tcc act cag cac tct gaa Lys Ile Val Gly Ile Asp Ala Val Val Leu Ser Thr Gln His Ser Glu 180 185 190	576
gag atc gac cag aaa tcg ctg caa gaa gcg gta atg gaa gag atc atc Glu Ile Asp Gln Lys Ser Leu Gln Glu Ala Val Met Glu Glu Ile Ile 195 200 205	624
aag cca att ctg ccc gct gaa tgg ctg act tct gcc acc aaa ttc ttc Lys Pro Ile Leu Pro Ala Glu Trp Leu Thr Ser Ala Thr Lys Phe Phe 210 215 220	672
atc aac ccg acc ggt cgt ttc gtt atc ggt ggc cca atg ggt gac tgc Ile Asn Pro Thr Gly Arg Phe Val Ile Gly Gly Pro Met Gly Asp Cys 225 230 235 240	720
ggc ctg act ggt cgt aaa att atc gtt gat acc tac ggc ggc atg gcg Gly Leu Thr Gly Arg Lys Ile Ile Val Asp Thr Tyr Gly Gly Met Ala 245 250 255	768
cgt cac ggt ggc ggt gca ttc tct ggt aaa gat cca tca aaa gtg gac Arg His Gly Gly Gly Ala Phe Ser Gly Lys Asp Pro Ser Lys Val Asp 260 265 270 275 280 285 290 295	816

260	265	270	
cgt tcc gca gcc tac gca gca cgt tat gtc gcg aaa aac atc gtt got			864
Arg Ser Ala Ala Tyr Ala Ala Arg Tyr Val Ala Lys Asn Ile Val Ala			
275	280	285	
gct ggc ctg gcc gat cgt tgt gaa att cag gtt tcc tac gca atc ggc			912
Ala Gly Leu Ala Asp Arg Cys Glu Ile Gln Val Ser Tyr Ala Ile Gly			
290	295	300	
gtg gct gaa ccg acc tcc atc atg gta gaa act ttc ggt act gag aaa			960
Val Ala Glu Pro Thr Ser Ile Met Val Glu Thr Phe Gly Thr Glu Lys			
305	310	315 320	
gtg cct tct gaa caa ctg acc ctg ctg gta cgt gag ttc ttc gac ctg			1008
Val Pro Ser Glu Gln Leu Thr Leu Leu Val Arg Glu Phe Phe Asp Leu			
325	330	335	
cgc cca tac ggt ctg att cag atg ctg gat ctg ctg cac ccg atc tac			1056
Arg Pro Tyr Gly Leu Ile Gln Met Leu Asp Leu Leu His Pro Ile Tyr			
340	345	350	
aaa gaa acc gca gca tac ggt cac ttt ggt cgt gaa cat ttc ccg tgg			1104
Lys Glu Thr Ala Ala Tyr Gly His Phe Gly Arg Glu His Phe Pro Trp			
355	360	365	
gaa aaa acc gac aaa gcg cag ctg ctg cgc gat gct gcc ggt ctg aag			1152
Glu Lys Thr Asp Lys Ala Gln Leu Leu Arg Asp Ala Ala Gly Leu Lys			
370	375	380	

taa 1155

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<212> PRT

<213> Escherichia coli

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Gly Met Val Leu Val Gly Gly Glu Ile Thr Thr Ser Ala Trp Val Asp	50	55	60
Ile Glu Glu Ile Thr Arg Asn Thr Val Arg Glu Ile Gly Tyr Val His	65	70	75
Ser Asp Met Gly Phe Asp Ala Asn Ser Cys Ala Val Leu Ser Ala Ile	85	90	95
Gly Lys Gln Ser Pro Asp Ile Asn Gln Gly Val Asp Arg Ala Asp Pro	100	105	110
Leu Glu Gln Gly Ala Gly Asp Gln Gly Leu Met Phe Gly Tyr Ala Thr	115	120	125
Asn Glu Thr Asp Val Leu Met Pro Ala Pro Ile Thr Tyr Ala His Arg	130	135	140
Leu Val Gln Arg Gln Ala Glu Val Arg Lys Asn Gly Thr Leu Pro Trp	145	150	155
Leu Arg Pro Asp Ala Lys Ser Gln Val Thr Phe Gln Tyr Asp Asp Gly	165	170	175
Lys Ile Val Gly Ile Asp Ala Val Val Leu Ser Thr Gln His Ser Glu	180	185	190

Glu Ile Asp Gln Lys Ser Leu Gln Glu Ala Val Met Glu Glu Ile Ile  
195 200 205

Lys Pro Ile Leu Pro Ala Glu Trp Leu Thr Ser Ala Thr Lys Phe Phe  
210 215 220

Ile Asn Pro Thr Gly Arg Phe Val Ile Gly Gly Pro Met Gly Asp Cys  
225 230 235 240

Gly Leu Thr Gly Arg Lys Ile Ile Val Asp Thr Tyr Gly Gly Met Ala  
245 250 255

Arg His Gly Gly Gly Ala Phe Ser Gly Lys Asp Pro Ser Lys Val Asp  
260 265 270

Arg Ser Ala Ala Tyr Ala Ala Arg Tyr Val Ala Lys Asn Ile Val Ala  
275 280 285

Ala Gly Leu Ala Asp Arg Cys Glu Ile Gln Val Ser Tyr Ala Ile Gly  
290 295 300

Val Ala Glu Pro Thr Ser Ile Met Val Glu Thr Phe Gly Thr Glu Lys  
305 310 315 320

Val Pro Ser Glu Gln Leu Thr Leu Leu Val Arg Glu Phe Phe Asp Leu  
325 330 335

Arg Pro Tyr Gly Leu Ile Gln Met Leu Asp Leu Leu His Pro Ile Tyr  
340 345 350

Lys Glu Thr Ala Ala Tyr Gly His Phe Gly Arg Glu His Phe Pro Trp  
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<213> Escherichia coli

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144

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50 55 60	
gtc gat att cag ctg ttg cgc atc gat tcc cgt gaa tgc cgc aac acg	240
Val Asp Ile Gln Leu Leu Arg Ile Asp Ser Arg Glu Ser Arg Asn Thr	
65 70 75 80	
ccc gca gag cat ctg aac aac ttc tac tgt aac ttt gaa gat att cag	288
Pro Ala Glu His Leu Asn Asn Phe Tyr Cys Asn Phe Glu Asp Ile Gln	
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Asp Gln Asn Phe Asp Gly Leu Ile Val Thr Gly Ala Pro Leu Gly Leu	
100 105 110	
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Val Glu Phe Asn Asp Val Ala Tyr Trp Pro Gln Ile Lys Gln Val Leu	
115 120 125	
gag tgg tgc aaa gat cac gtc acc tgc acg ctg ttt gtc tgc tgg gcg	432
Glu Trp Ser Lys Asp His Val Thr Ser Thr Leu Phe Val Cys Trp Ala	
130 135 140	
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Val Gln Ala Ala Leu Asn Ile Leu Tyr Gly Ile Pro Lys Gln Thr Arg	
145 150 155 160	
acc gaa aaa ctc tct ggc gtt tac gag cat cat att ctc cat cct cat	528
Thr Glu Lys Leu Ser Gly Val Tyr Glu His His Ile Leu His Pro His	
165 170 175	
gcg ctt ctg acg cgt ggc ttt gat gat tca ttc ctg gca ccg cat tgc	576
Ala Leu Leu Thr Arg Gly Phe Asp Asp Ser Phe Leu Ala Pro His Ser	
180 185 190	
cgc tat gct gac ttt ccg gca gcg ttg att cgt gat tac acc gat ctg	624
Arg Tyr Ala Asp Phe Pro Ala Ala Leu Ile Arg Asp Tyr Thr Asp Leu	
195 200 205	
gaa att ctg gca gag acg gaa gaa ggg gat gca tat ctg ttt gcc agt	672
Glu Ile Leu Ala Glu Thr Glu Glu Gly Asp Ala Tyr Leu Phe Ala Ser	
210 215 220	



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 Lys Asp Lys Arg Ile Ala Phe Val Thr Gly His Pro Glu Tyr Asp Ala  
 225 230 235 240

caa acg ctg gcg cag gaa ttt ttc cgc gat gtg gaa gcc gga cta gac 768  
 Gln Thr Leu Ala Gln Glu Phe Phe Arg Asp Val Glu Ala Gly Leu Asp  
 245 250 255

cgc gat gta ccg tat aac tat ttc ccg cac aat gat ccg caa aat aca 816  
 Pro Asp Val Pro Tyr Asn Tyr Phe Pro His Asn Asp Pro Gln Asn Thr  
 260 265 270

ccg cga gcg agc tgg cgt agt cac ggt aat tta ctg ttt acc aac tgg 864  
 Pro Arg Ala Ser Trp Arg Ser His Gly Asn Leu Leu Phe Thr Asn Trp  
 275 280 285

ctc aac tat tac gtc tac cag atc acg cca tac gat cta cgg cac atg 912  
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<211> 309

<212> PRT

<213> Escherichia coli

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40

45

Glu Thr Glu Asn Gln Phe Leu Arg Leu Leu Ser Asn Ser Pro Leu Gln  
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Val Asp Ile Gln Leu Leu Arg Ile Asp Ser Arg Glu Ser Arg Asn Thr  
 65 70 75 80

Pro Ala Glu His Leu Asn Asn Phe Tyr Cys Asn Phe Glu Asp Ile Gln  
 85 90 95

Asp Gln Asn Phe Asp Gly Leu Ile Val Thr Gly Ala Pro Leu Gly Leu  
 100 105 110

Val Glu Phe Asn Asp Val Ala Tyr Trp Pro Gln Ile Lys Gln Val Leu  
 115 120 125

Glu Trp Ser Lys Asp His Val Thr Ser Thr Leu Phe Val Cys Trp Ala  
 130 135 140

Val Gln Ala Ala Leu Asn Ile Leu Tyr Gly Ile Pro Lys Gln Thr Arg  
 145 150 155 160

Thr Glu Lys Leu Ser Gly Val Tyr Glu His His Ile Leu His Pro His  
 165 170 175

Ala Leu Leu Thr Arg Gly Phe Asp Asp Ser Phe Leu Ala Pro His Ser  
 180 185 190

Arg Tyr Ala Asp Phe Pro Ala Ala Leu Ile Arg Asp Tyr Thr Asp Leu  
 195 200 205

Glu Ile Leu Ala Glu Thr Glu Glu Gly Asp Ala Tyr Leu Phe Ala Ser  
 210 215 220

Lys Asp Lys Arg Ile Ala Phe Val Thr Gly His Pro Glu Tyr Asp Ala  
 225 230 235 240

Gln Thr Leu Ala Gln Glu Phe Phe Arg Asp Val Glu Ala Gly Leu Asp  
 245 250 255

Pro Asp Val Pro Tyr Asn Tyr Phe Pro His Asn Asp Pro Gln Asn Thr  
 260 265 270

Pro Arg Ala Ser Trp Arg Ser His Gly Asn Leu Leu Phe Thr Asn Trp  
 275 280 285

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Asn Pro Thr Leu Asp  
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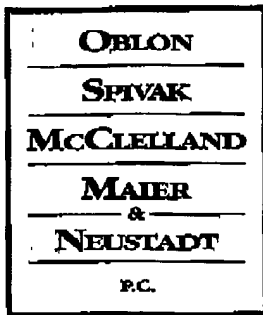
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<213> Escherichia coli

<400> 29

Ala Met Leu Pro Val

1 5



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## FACSIMILE

PLEASE CALL US AT (703) 413-3000 IF THE MESSAGE YOU RECEIVE IS INCOMPLETE OR NOT LEGIBLE

TO	<u>Christian L. Fronda</u>	<u>May 23, 2002</u>
	NAME	DATE
	<u>U.S. Patent and Trademark Office</u>	<u>703-746-5036</u> <i>2nd DAY</i>
	COMPANY/FIRM	FAX #
	NUMBER OF PAGES INCLUDING COVER: <u>21</u>	CONFIRM FAX: <input type="checkbox"/> YES <input type="checkbox"/> NO
FROM	<u>Thomas Barnes</u>	<u>0010-1057-0</u>
	NAME	OUR REFERENCE
	<u>703-412-3525</u>	<u>Serial No. 09/441,055</u>
	DIRECT PHONE #	YOUR REFERENCE

## MESSAGE

In accordance with your instructions in our telephone discussion of May 22, 2002, I have attached a copy of the Sequence Listing filed on February 19, 2002.

Please call if you have any questions.

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